

ABSTRACT OF THE DISCLOSURE

A vehicle having an internal combustion engine, a cranking motor, and a battery includes a double-layer capacitor characterized by a capacitance greater than 150 farads, and a low internal resistance. First and second electrical paths interconnect the capacitor with the cranking motor. A control circuit is coupled between the positive and negative terminals of at least one of the capacitor and battery, and this control circuit includes a switch that applies a variable control voltage to a relay in response to the position of the switch. The relay is included in one of the electrical paths, and the relay isolates the capacitor from the cranking motor when switched to the open-circuit condition by the control voltage and enables the capacitor to supply cranking current to the cranking motor when the control voltage places the relay in the closed-circuit condition.